



July 23, 2013

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Revision of Part 15 of the Commission's Rules	)	ET Docket No. 13-49
to Permit Unlicensed National Information	)	
Infrastructure (U-NII) Devices in the 5 GHz	)	
Band	)	

**REPLY COMMENTS OF  
SAE International.**

As a reintroduction, SAE International, formerly the Society of Automotive Engineers, (hereinafter "SAE" or "SAE International") is a global society of more than 138,000 engineers and related technical experts in the aerospace, automotive and commercial-vehicle industries. SAE's core competency is voluntary consensus standards development, where it plays the central role in developing automotive standards used in product development globally.

As noted in our original filing, SAE's Dedicated Short Range Communications (DSRC) Technical Committee ("TC") is a committee comprised of experts from various automotive and communication related industries. This TC has worked diligently to produce and publish several ITS related message set standards including the DSRC Message Set Dictionary (SAE J2735). The TC is also developing application guidelines, reference architectures, and other technical material to support the SAE J2735 standard. These outputs have been specifically designed for critical short and medium-range vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) safety and mobility applications to be deployed in the DSRC 5.9GHz band. Thus, we have an informed point of view. Furthermore, since the FCC allocated the DSRC 5.9 GHz band, automakers, road operators and other interested stakeholders have worked diligently to develop standards to enable products to utilize this spectrum to support DSRC vehicle safety, mobility and sustainability. We are convinced that, when implemented, the results of these efforts will lead to a significant improvement in transportation safety. We firmly believe that to realize these safety improvements with DSRC, we must ensure that secondary users do not impact safety-of-life and public safety applications.

Over the last several years, a significant effort has been undertaken by a number of stakeholders to develop and test interoperable, standards-based systems. The careful,

scientific and standards-based development has culminated in field tests currently underway. Therefore, the lack of deployed facilities to date does not reflect a failure to work toward use of the spectrum. Rather, it reflects prudent care in advance of a universal paradigm-shifting safety system.

So, we concur with the Wireless Internet Service Providers Association's (WISPA) comment in their July 12, 2013 filing that more study is needed before deciding whether to allow other unlicensed users into the DSRC 5.9 GHz band. We also share the same concern as stated in the Alliance of Automobile Manufacturers and Association of Global Automakers filing that a U-NII device located in the same vehicle as the DSRC receiver or in the vicinity can cause harmful interference potentially necessitating interference mitigation technologies to satisfy the requirement of non-harmful interference to incumbent DSRC operations. We also support the National Association of Amateur Radio's comment that "it would be premature to permit U-NII devices to operate at 5850-5925 MHz" because NTIA needs more time to complete its evaluations of interference on incumbent users as required by current legislation.

We support the California Department of Transportation in their May 28, 2013 filing where they raised concerns about relative power levels. The DSRC power levels are low for a reason. As was anticipated by the Commission in allocating the 5.9 GHz band for ITS, only by maintaining low transmit powers can the low latency, high reliability communications needed for safety-of-life succeed in the dense radio environments of heavily traveled roads. This has also been verified in simulations and field trials that have been conducted to date.

We also note and agree with Qualcomm that maximum allowed transmission power levels of 20 dBm for VHT40/80/160 packets and 12 dBm for VHT20 packets "are still sufficient for the intended low-power short-range communication Wi-Fi use cases for this band" (Comments of Qualcomm Incorporated, ET Docket No. 13-49, May 28, 2013, Section I C, p. 11). Accordingly, and in view of the harmful interference that is likely to result from higher power U-NII-4 transmission in the vicinity of low-power DSRC devices, we urge the Commission to reduce the maximum output power for unlicensed devices in the U-NII-4 band to an appropriate limit to be determined by further research, likely the lesser of 100 milliwatts and  $7\text{dBm} + \text{Log}(B)$  where  $B$  is the 26 dB emission bandwidth.

In comparison, WISPA in their May 28, 2013 filing proposed increasing the allowed transmit power for U-NII-3 to 1000mW from the current assignments of 10-758 mW, based on radio class, while extending the range for U-NII-3 to include the DSRC 5.9 GHz band, thus eliminating the 5 MHz guard band. The WISPA proposal further proposes antenna gain for point-to-point communications in the ISM 5.8 GHz band to be unlimited and in the DSRC 5.9 GHz band to be 23 dBi. We do not support this proposal because these high radiated power levels would overwhelm any potentially life-saving DSRC communications nearby. Even the slightly higher-power infrastructure-based equipment for public safety ITS would not be able to tolerate such strong interference, jeopardizing such applications as commercial vehicle safety inspections, intersection collision avoidance, and road incident management. First responders such as snowplow operators, tow operators and hazardous material crews could also experience intolerable interference. In addition, without a guard band, out of channel emissions of

unlimited gain antennas in the adjacent band would likely be problematic where roads cross the concentrated beam.

The applications mentioned above are only a small subset of the numerous ITS safety and mobility applications that may need to operate in the DSRC 5.9 GHz band without harmful interference. Even with the significant life-saving potential already identified, the planning of the DSRC 5.9 GHz band should not be limited to just the use cases currently under development. Accommodating the safety needs of vulnerable users such as pedestrians, bicyclists, and disabled persons may require use of additional spectrum in the DSRC 5.9 GHz band. Furthermore, additional system requirements continue to appear, such as cooperative automated driving and the request to accommodate positive train control in the DSRC 5.9 GHz band in hopes of preventing future rail disasters, and spectrum will be necessary to accommodate them.

We disagree with Microsoft and Google's comments that suggest geographic databases could be used effectively to prevent 5.9 GHz interference, because their suggestions do not explicitly guarantee the power and antenna gain to prevent the interference on roadways from several hundred meter distances further than the distance needed for V2V safety application operation. While creative, not all of the ITS demands on the band have been taken into consideration by their proposal. U-NII will probably have to get by with an 80 or 120 MHz upper channel. But the latter would still take part of the DSRC spectrum and should not be embarked upon too hastily.

Finally, while we are sympathetic to the comment from the Association for the Advancement of Medical Instrumentation (AAMI) in their May 24 filing that life critical uses of the spectrum should take priority, we do not support their conclusion that medical equipment should take priority over the time critical safety-of-life and public safety applications. Clearly, it's better to prevent the trauma in the first place.

Thank you for this opportunity to further comment on this important proceeding. We will continue to monitor this docket and look forward to sharing with the FCC the status of our work associated with this rulemaking. If you have any questions regarding our response, please contact me at 202.434.8944.

Respectfully submitted,

A handwritten signature in black ink that reads "Tim Mellon". The signature is fluid and cursive, with a long horizontal line extending from the top of the "T".

Timothy Mellon  
Director, Government Affairs

cc: Jack Pokrzywa, Director, SAE Ground Vehicle Standards  
Sue Bai, Chair, SAE DSRC Committee